

Seaweed Processed Products in Improving Community Economy

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Abstract: - Seaweed is widely used as a food and health product. Not only that, this plant is also used for food, fertilizer, food additives, and pollution control and beauty ingredients. The purpose of the research is to increase processed seaweed products into fish / livestock feed in environmentally friendly coastal communities. The method used in this study is a financial analysis approach to calculate the added value of fish / livestock food feed. The research population is Sidoarjo Regency. The research sample was focused on grass-based fish / livestock food product business units in coastal communities in Sidoarjo Regency. The results showed that seaweed if processed into food for fish / livestock food will bring much higher profits than selling it directly without being processed and the results of this effort can improve the family economy.

Keywords: Seaweed, Products, Community, Economy Family

Introduction

The potential and quality of Indonesian seaweed as well as its derivative products is very extraordinary which also makes it attractive to various countries in the world. Nearly 555 types of seaweed in Indonesia and most seaweed products have been exported as dried and processed seaweed. However, in general, Indonesian seaweed cultivation is still done in a traditional way, is simple, and has not received much technological input from outside (Anonim, 2007; Sujiharno et al., 2001). Seaweed is widely used as a food and health product. According to Asaad et al. (2008), the advantages of seaweed farming include absorbing labor. Not only that, this plant is also used for food, fertilizer, food additives, pollution control and beauty ingredients. East Java itself is one of the 10 largest seaweed producing regions in Indonesia. With the potential of its marine waters which is very suitable for the development of seaweed cultivation, East Java is transformed into one of the national seaweed production centers. Sidoarjo Regency is one of the coastal areas in East Java which has the largest

seaweed yield. Sidoarjo Regency consists of land area and ocean area with a land area of 714,245 km² consisting of 18 sub-districts. In supporting the development of the fisheries sector the Minneapolis area has been established, which consists of 6 sub-districts namely Candi, Sidoarjo, Sedati, Waru, Buduran, and Jabon Districts. The problems that have occurred so far have shifted the commodity of Sidoarjo pond farmers, especially those living in the area of Kedungpandan Village which has an area of 1,723.02 hectares, starting from many who develop their pond cultivation business to seaweed cultivation. The farmers see that seaweed farming is actually more profitable and has greater production potential, if later the program on Seaweed Industrialization is truly successful. Seaweed farming, on average, can reach yields of up to Rp 7 to Rp. 10 million / hectare for ponds with a harvest period of between 60 and 90 days. The Feasibility Analysis of the application of the results of this research begins with the feasibility of the object of research. The Indonesian government has always encouraged the cultivation

and industrialization of seaweed. Seaweed also has economic value, creates many jobs, as well as requests for exports to China and can increase the productivity of shrimp and milkfish. Over time, the demand for seaweed exports to China has declined due to the fact that China produces its own seaweed, so in the end pond farmers only sell seaweed production to seaweed processing plants. Recently, almost all segments of the seaweed industry still face many obstacles, especially at the level of smallholder management in the production and processing industries (Ibrahim, 2017). Finally, morally and materially the farmer farmers suffer from the economic side. This case is a big problem for the Sidoarjo regional government to provide a solution to how seaweed can be processed and utilized and can improve local economic growth in the Sidoarjo community, therefore it is necessary to process, utilize and diversify seaweed so that it has added value to the Sidoarjo community, especially pond farmers. Seaweed cultivators are also important to be provided with entrepreneurial insights to market their products and be assisted in facilitating access to financial institutions. The realization and improvement of sustainable and environmentally sound economic development (Eco-Growth) is the main focus of this research. With the market demand for seaweed declining, causing a lot of seaweed barns in Sidoarjo Regency that have no economic value, many are even discarded when the condition of seaweed begins to rot. This will clearly have an impact on the environment of Kedungpandan Village and Kupang Village, Sidoarjo Regency. Therefore, there is a need for innovation to increase the economic value of seaweed with a variety of processed products. The development of Spinifex Litotes (Seaweed) processed products is more focused on fish / livestock feed products. This was based on the large number of shrimp and fish farmers who became the leading commodities in several regions in East Java. The research objective is to increase processed seaweed products into fish / livestock feed in improving the economy of the community.

Literature Review

Revenue Theory

Definition of Revenue is all one's income as remuneration in the production process. The remuneration can be in the form of wages, interest, rent, or profit depending on what factors of production are involved in the production process. Another understanding of income is a number of funds obtained from the utilization of the factors of production owned. Before analyzing the results of the business, it is necessary to know the production costs or the amount of business capital spent while conducting seaweed farming. Production costs include two types, namely fixed costs and variable costs (Indriani, 2003).

These income sources include:

1. Rent wealth used by other people, for example renting out houses, land.
2. Wages or salaries for working for other people or being civil servants.
3. Interest for investing in a bank or company, for example depositing money in a bank and buying shares.
4. The results of an entrepreneurial business, such as trading, fighting, establishing a company, or farming (Rineka, 2010).

Industry, defined as crafts, business products and or small companies.

The analysis consisted of: Business Revenue Analysis, Revenue Cost Ratio (R / C) Analysis, Break Event Point Analysis, Profit Analysis, Economic Rentability Analysis, and Return Period Analysis. (Ghufran, 2011)

1. Analysis of business income obtained from total revenue (total revenue / TR) minus total costs (total cost / TC)
2. Analysis of Revenue Cost Ratio (R / C) R / C is obtained from TR compared to TC,
3. Analysis of Break Event Points TR = TC. BEP in kilograms is obtained from the Total Cost compared to the selling price per Kilogram.

4. Analysis of the benefits obtained ROI is obtained from Operating Profits compared to Production Capital.
5. Analysis of economic rentability

According to (Kordi, 2011) argues that the main goal in a business is to make a profit. The more profits obtained; the business will grow. Farmers or entrepreneurs can find out how much profit will or has been gained by making a business analysis. The results of the analysis can later be used to assess the feasibility of the business being run. To see business feasibility, it is obtained from the presentation of operating profit compared to business capital and operating costs. If the results are above 19% then the business is said to be feasible. (Hayami, 2014).

Empirical Study

One of the feed binders used in producing shrimp feed is seaweed (Saade, 2009). (Wiesje, 2009) in her research entitled "The Effect of Utilization of Gracillariid Edulis Seaweed in Feed on Chicken Performance Phase Pullet" explained that the use of Gracillariid edulis seaweed up to 15% level in feed did not reduce the performance of pullet chicken and gave a deeper yellow color eggs, but have not been able to increase iodine levels in eggs. (Bagus, 2011) the results of his research entitled "Prospects for the Development of Seaweed Processing Technology in Indonesia" said that in Indonesia seaweed has been processed into a variety of ready-to-eat food products both in the scale of home industry and large industries while processing into semi-finished materials mostly only carried out by large industries for technical and economic reasons. (Mustaqim, 2013) in his research entitled "Treatment of Seaweed Waste as an Alternative to Animal Feed and Fish" explained that Gracillariid seaweed, which is around 500 kg per day contained carbohydrates and chopsticks containing calcium and high protein, is one potential as an additional ingredient fish feed nutrients, whether cultivated by clusters or can even be sold. In the process of processing seaweed waste and chopsticks as the basic material for making fish / livestock feed, a tool is needed in the form of a chopper, flour and pellet making machine. The results of analysis of

seaweed and chopstick waste contain crude protein levels of 7.0792% and 2.5274%, respectively. From the results of the protein content, formulations are then carried out using the quadrant or Penson square method. The results of the formulation for 1kg feed (1000gr) are needed chopstick flour 360.75gr, fish meal 360.75gr, 69gr seaweed flour, bran 69gr, corn flour 69gr, vitamin mix 20gr, CMC 20gr and lysine 20gr.

Research Methodology

The study uses financial analysis methods with a business income analysis approach, which consists of: Revenue Cost Ratio (R / C), Break Event Point, profit earned, and economic rentability (Ghufran, 2011) to measure the level of profit and feasibility of feed whether seaweed can provide added value to people's welfare in Sidoarjo Regency, East Java Province.

Analysis of Spinifex Liitoreus Seaweed Feed Revenues Researchers conducted training on seaweed processing, from 100 grams of dried seaweed soaked and cleaned, can get 1 kg of wet seaweed ready for processing. From 1 kg of wet seaweed that is ready to be processed, get 600 grams of fish / livestock food feed which is ready to be consumed or sold assuming that it includes additional supplementary material besides seaweed. If 1 Kg of dried seaweed is soaked and cleaned, it can get 10 kg of wet seaweed ready for processing, and from 10 kg of wet seaweed ready for processing, get 6 kg of fish / livestock food feed that is ready to be consumed or sold, also assuming it includes additional supplementary material besides seaweed.

For 1 kg of dried seaweed, it can produce 6 kg of fish / livestock food feed with the assumption that it includes additional supplementary materials. The selling price of dried seaweed on the market is Rp. 12,000 per 1 Kg. Selling price for 1 kg of seaweed food / fish feed in the market at a price of IDR 70,000 Kg. In the process of feeding 1 kg of dried seaweed that is processed can produce 3 kg of fish food / seaweed livestock by not accumulating supplementary materials, then the added value of processed seaweed products into fish / livestock

food feeds is very much felt by seaweed farmers. It is proven by 3 Kg of processed products can get Rp.210,000, - minus the selling price of dried seaweed, so that farmers get added value of Rp.198,000, - per 1 Kg of dried seaweed into food for fish / livestock.

For the calculation of business feasibility, according to the information obtained, it is supported by data processing 100 kg of dried seaweed, so that the total income of seaweed-based fish feed products is Rp.7,000,000.

Table 1 Analysis of Seaweed Business

Analysis Ratio	Cultivation	Processing
<i>Revenue Cost Ratio</i>	10,36	2,05
<i>Break Event Point</i>	1.892,5 Kg	48,87 Kg
<i>Return on Investment</i>	9,36 %	104,62 %
<i>Economic Rentability</i>	9,02 %	94,11

Based on the results of the calculation of Revenue Cost Ratio (R / C) analysis, the value (R / C) obtained for the sale of dried seaweed is 10.36. Based on the Revenue Cost Ratio (R / C) criteria obtained $R / C > 1$, so it can be interpreted that seaweed business for the sale of dried seaweed is profitable, and based on the Revenue Cost Ratio (R / C) criteria obtained $R / C > 1$, so that it can be interpreted that seaweed processing in the form of fish / livestock food products for sale is very profitable. The acquisition of BEP (kg) above means that the break-even point will be achieved when seaweed cultivation produces 1,892.5 k seaweed seeds, and the break-even point will be achieved when processing seaweed produces 48.87 kg of fish / livestock feed.

Based on the ratio of profit and production capital, obtained an ROI value of 9.36%, which means that the amount of profit obtained compared to the amount of the cost for the business is "good", meaning that every capital of Rp.100 is obtained a profit of Rp.9.36. Then for seaweed processing business is also "good" meaning, every capital of Rp.100 for processing seaweed in the form of fish / livestock food feed is gotten a profit of Rp.104.62. The acquisition of economic rentability above shows the results of $9.02\% > 9\%$ so that it can be considered feasible for business, and the yield for processing shows 94.11% more than 9%, it can be said that seaweed processing in the form of fish / livestock food becomes feasible to run as a business.

Discussion

This research was conducted as an effort to overcome the problems faced by seaweed farmers. Where previously dried *Spinifex Liitoreus* seaweed harvests could be sold easily. This commodity was originally sold in several countries in very large quantities but demand was decreasing because the buying countries were now producing countries. The end of seaweed gradually stagnates until decay occurs and is removed so that seaweed farmers suffer losses. Researchers see scientifically that this can be prevented. By trying to develop *Spinifex Liitoreus* seaweed into processed fish / livestock food products that are considered to increase the economic income of the people in Sidoarjo Regency, East Java Province.

Based on the results of the calculation of income analysis, Revenue Cost Ratio analysis, seaweed processing business in the form of fish / livestock food products for sale is very profitable. Analysis of Break Event Point (BEP), and ROI and analysis of economic rentability, processing seaweed raw materials into fish / livestock feed is far more profitable than selling direct dried seaweed for fish / livestock food. The analysis of the income of seaweed processing business is very promising when pursued, some of them as cultivators as well as seaweed processors become feed for fish / livestock food.

Much research has been done on seaweed extraction according to (Horhoruw, 2009) the results of his study concluded that the use of *Gracillariid edulis* seaweed up to 15% level in feed did not reduce the

performance of pullet chicken and gave a more yellow color in the eggs, but could not increase iodine in eggs. The above statement is supported by (Channa, 2016) saying that it is necessary to diversify fish processing technology by utilizing abundant catches of seaweed and fish, the study shows on a variety of ready-to-eat food products on a large scale household and industrial industries and become ingredients half done by large industries for technical and economic reasons. Processing seaweed waste as an alternative to animal feed and fish. The results of the analysis of seaweed and chopstick waste contain crude protein levels respectively. The study did not examine the income of seaweed farmers. This concept was adopted by researchers to empower seaweed farmers in coastal communities in Sidoarjo Regency so that if seaweed is produced in large quantities it can provide multiple benefits for seaweed farmers, thus stagnating seaweed is overcome, community welfare can be felt. This form of business also has a positive impact on the community where through processed seaweed products to feed fish / livestock food provides employment opportunities for people in Sidoarjo Regency, East Java Province. This encouragement is important because small and medium micro businesses are seen as being able to encourage the emergence of various new forms of business and play a greater role in creating technology, through changing industrial forms from large scale mass-production to more flexible, knowledge-based forms intensive), creative, encouraging entrepreneurship and more varied in the form of processing (Wicaksono, 2012). Its contribution is significant for reducing unemployment, job creation and income (Niode, 2014). Small and medium micro enterprises have been tested as business groups that have responsive power, flexibility, and extraordinary adaptation to various market changes. Empowerment of small and medium micro businesses there is access to capital, training, market access, and product quality improvement (Suprayitno, 2018). The recommended business development strategy is to maintain and maintain by way of market penetration and product development (Hapsari, 2008).

Efforts to develop the market can be carried out through increasing market penetration, market development and product development strategies. Therefore, the role of academics is very much needed in helping MSMEs to find the right strategies in improving their marketing performance, one of which is through the strategy of market penetration growth. This market penetration strategy is chosen given the limited capital available in MSMEs, and is a strategy that has the least risk in developing markets (Kuntjoradi, 2009). The government needs to move more economic activities so that micro and small industries are more advanced and continue to grow by strengthening industrial institutions, in particular, improving production, financial, licensing, and market segments management (Purnomo, 2015). Marketers who have entrepreneurial spirit to achieve marketing goals and companies must have the concept of marketing and entrepreneurship especially for Micro, Small and Medium Enterprises (Ernani, 2009). Entrepreneurship marketing has an effect on business performance from the level of sales growth and profits (Kocak, 2009). In order to win every competition, every company must have a competitive strategy. The ultimate goal of a competitive strategy is to tackle environmental forces in the interests of the company.

The rules or competitive environment that exists in industry consists of 5 competing forces (figure 1), namely the entry of new competitors, threats from substitute products (substitution), bidding power (bargaining) of buyers, power of supplier offerings, and competition among competitors - existing competitors. Sustainable competitive advantage is an advantage that is not easily imitated, makes it easy.

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